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ABSTRACT

This glossary is designed for students studying about the environment. The document is not intended for scientists and technicians. Several hundred terms are included in the glossary. (RH)

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Common Environmental Terms

A Glossary

SE 021 936

Common Environmental Terms

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Foreword

The words and terms included in this glossary are used in discussing and writing about the environment. We have excepted household words generally understood and defined elsewhere, such as water or air, but have included certain common words which, while not peculiar to the environment, occur frequently in environmental literature and are important to a student's understanding of pollution problems—words like adsorption or rodenticide. The glossary also explains the meaning of words such as dust and abatement as they apply to the environment even though definitions of such words are found in ordinary dictionaries.

In sum, we have endeavored in a single listing to compile and define the most common words and terms essential to the study, understanding and solution of environmental problems. Where so many words and terms are concerned, it is sometimes difficult to settle upon definitions acceptable to users who represent a great variety of pursuits and interests. This is particularly true of the newer words generated by science and technology. It may be recalled that Dr. Samuel Johnson once described a compiler of dictionaries as a "harmless drudge" and observed: "Dictionaries are like watches; the worst is better than none, and the best cannot be expected to go quite true."

We do not expect this glossary to be used extensively by technicians and professionals in environmental control. It was not designed for that purpose. Rather, it is our hope that it will stimulate and improve a student's understanding of man's environment and the interrelationship of the forces and elements that comprise it.

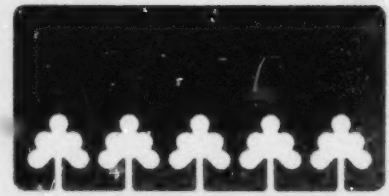
Acknowledgements

So many good people helped compile this glossary it would be impossible to list them all, but sincere thanks go to each. Employees of EPA's Region IV deserve special mention for contributing words for inclusion.

Specific credit should be given to my major sources: Paul Sarnoff's delightful *The New York Times Encyclopedic Dictionary of the Environment*, Herbert Hanson's *Dictionary of Ecology*, the American Society of Civil Engineers' *Glossary—Water and Sewage Control Engineering*, Veatch and Humphrys' *Water and Water Use Terminology* and a myriad of other equally good, but untraceable sources.

My especial thanks go to Charles Pou for his patience and moral support, to Dr. Walter Bishop, my mentor, and to Daisy Sawicki for her beautiful typing and for uncomplainingly correcting my misspelling of "eutrophication" all the way through.

G. J. S.



abatement: The method of reducing the degree or intensity of pollution, also the use of such a method.

absorption: The penetration of a substance into or through another. For example, in air pollution control, absorption is the dissolving of a soluble gas, present in an emission, in a liquid which can be extracted.

accelerator: In radiology, a device for imparting high velocity to charged particles such as electrons or protons. These fast particles can penetrate matter and are known as radiation.

acclimation: The physiological and behavioral adjustments of an organism to changes in its immediate environment.

acclimatization: The acclimation or adaptation of a particular species over several generations to a marked change in the environment.

activated carbon: A highly adsorbent form of carbon, used to remove odors and toxic substances from gaseous emissions. In advanced waste treatment, activated carbon is used to remove dissolved organic matter from waste water.

activated sludge: Sludge that has been aerated and subjected to bacterial action, used to remove organic matter from sewage.

activated sludge process: The process of using biologically active sewage sludge to hasten breakdown of organic matter in raw sewage during secondary waste treatment.

acute toxicity: Any poisonous effect produced within a short period of time, usually up to 24-96 hours, resulting in severe biological harm and often death.

adaptation: A change in structure or habit of an organism that produces better adjustment to the environment.

adsorption: The adhesion of a substance to the surface of a solid or liquid. Adsorption is often used to extract pollutants by causing them to be attached to such adsorbents as activated carbon or silica gel. Hydrophobic, or water-repulsing adsorbents, are used to extract oil from waterways in oil spills.

adulterants: Chemicals or substances that by law do not belong in a food, plant, animal or pesticide formulation. Adulterated products are subject to seizure by the Food and Drug Administration.

advanced waste treatment: Waste water treatment beyond the secondary or biological stage that includes removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids. Advanced waste treatment, known as tertiary treatment, is the "polishing stage" of waste water treatment and produces a high quality effluent.

aeration: The process of being supplied or impregnated with air. Aeration is used in waste water treatment to foster biological and chemical purification.

aerobic: This refers to life or processes that can occur only in the presence of oxygen.

aerosol: A suspension of liquid or solid particles in the air.

afterburner: An air pollution abatement device that removes undesirable organic gases through incineration.

agricultural pollution: The liquid and solid wastes from all types of farming, including runoff from pesticides, fertilizers and feedlots; erosion and dust from plowing, animal manure and carcasses and crop residues and debris. It has been estimated that agricultural pollution in the U.S. has amounted to more than 2½ billion tons per year.

air curtain: A method for mechanical containment of oil spills. Air is bubbled through a perforated pipe

causing an upward water flow that retards the spreading of oil. Air curtains are also used as barriers to prevent fish from entering a polluted body of water.

air mass: A widespread body of air with properties that were established while the air was situated over a particular region of the earth's surface and that undergoes specific modifications while in transit away from that region.

air monitoring: See monitoring.

air pollution: The presence of contaminants in the air in concentrations that prevent the normal dispersive ability of the air and that interfere directly or indirectly with man's health, safety or comfort or with the full use and enjoyment of his property.

air pollution episode: The occurrence of abnormally high concentrations of air pollutants usually due to low winds and temperature inversion and accompanied by an increase in illness and death. See inversion.

air quality control region: An area designated by the Federal government where two or more communities—either in the same or different states—share a common air pollution problem.

air quality criteria: The levels of pollution and lengths of exposure at which adverse effects on health and welfare occur.

air quality standards: The prescribed level of pollutants in the outside air that cannot be exceeded legally during a specified time in a specified geographical area.

algal bloom: A proliferation of living algae on the surface of lakes, streams or ponds. Algal blooms are stimulated by phosphate enrichment.

alpha particle: A positively charged particle emitted by certain radioactive materials. It is the least penetrating of the three common types of radiation (alpha, beta and gamma) and usually not dangerous to plants, animals or man.

ambient air: Any unconfined portion of the atmosphere; the outside air.

anadromous: Type of fish that ascend rivers from the sea to spawn.

anaerobic: Refers to life or processes that occur in the absence of oxygen.

anticoagulant: A chemical that interferes with blood clotting, often used as a rodenticide.

anti-degradation clause: A provision in air quality and water quality laws that prohibits deterioration of air or water quality in areas where the pollution levels are presently below those allowed.

aquaculture project: A controlled discharge of pollutants to enhance growth or propagation of harvestable freshwater, estuarine, or marine life plant or animal species.

aquifer: An underground bed or stratum of earth, gravel or porous stone that contains water.

aquatic plants: Plants that grow in water either floating on the surface, growing up from the bottom of the body of water or growing under the surface of the water.

area source: In air pollution, any small individual fuel combustion source, including any transportation sources. This is a general definition; area source is legally and precisely defined in Federal regulations. See point source.

asbestos: A mineral fiber with countless industrial uses; a hazardous air pollutant when inhaled; its effects as a water pollutant are under scrutiny.

A-Scale sound level: The measurement of sound approximating the auditory sensitivity of the human ear. The A-Scale sound level is used to measure the relative noisiness or annoyance of common sounds.

assimilation: Conversion or incorporation of absorbed nutrients into protoplasm. Also refers to the ability of a body of water to purify itself of organic pollution.

atmosphere: The layer of air surrounding the earth.

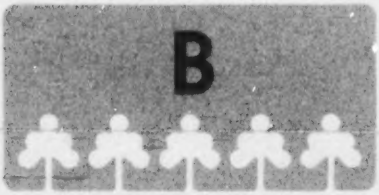
atomic pile: A nuclear reactor.

attractant: A chemical or agent that lures insects or other pests by olfactory stimulation.

tributing processes of air pollution, the others are vaporization and combustion.

audiometer: An instrument for measuring hearing sensitivity.

autotrophic: Self-nourishing; denoting those organisms capable of constructing organic matter from inorganic substances.



backfill: The material used to refill a ditch or other excavation, or the process of doing so.

background level: With respect to air pollution, amounts of pollutants present in the ambient air due to natural sources.

background radiation: Normal radiation present in the lower atmosphere from cosmic rays and from earth sources.

bacteria: Single-celled microorganisms that lack chlorophyll. Some bacteria are capable of causing human, animal or plant diseases, others are essential in pollution control because they break down organic matter in the air and in the water.

baffle: Any deflector device used to change the direction of flow or the velocity of water, sewage or products of combustion such as fly ash or coarse particulate matter. Also used in deadening sound.

baghouse: An air pollution abatement device used to trap particulates by filtering gas streams through large fabric bags, usually made of glass fibers.

baling: A means of reducing the volume of solid waste by compaction.

ballistic separator: A machine that separates inorganic from organic matter in a composting process.

band application: With respect to pesticides, the application of the chemical over or next to each row of plants in a field.

bar screen: In waste water treatment, a screen that removes large floating and suspended solids.

basal application: With respect to pesticides, the application of the pesticide formulation on stems or trunks of plants just above the soil line.

basin: See river basin.

benthic region: The bottom of a body of water. This region supports the benthos, a type of life that not only lives upon, but contributes to the character of the bottom.

benthos: The plant and animal life whose habitat is the bottom of a sea, lake or river.

beryllium: A metal that when airborne has adverse effects on human health; it has been declared a hazardous air pollutant. It is primarily discharged by operations such as machine shops, ceramic and propellant plants and foundries.

beta particle: An elementary particle emitted by radioactive decay that may cause skin burns. It is easily stopped by a thin sheet of metal.

bioassay: The employment of living organisms to determine the biological effect of some substance, factor or condition.

biochemical oxygen demand (BOD): A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. Large amounts of organic waste use up large amounts of dissolved oxygen, thus the greater the degree of pollution, the greater the BOD.

biodegradable: The process of decomposing quickly as a result of the action of microorganisms.

biological control: A method of controlling pests by means of introduced

or naturally occurring predatory organisms, sterilization or the use of inhibiting hormones, etc., rather than by mechanical or chemical means.

biological oxidation: The process by which bacterial and other microorganisms feed on complex organic materials and decompose them. Self-purification of waterways and activated sludge and trickling filter waste water treatment processes depend on this principle. The process is also called biochemical oxidation.

biomonitoring: The use of living organisms to test the suitability of effluent for discharge into receiving waters and to test the quality of such waters downstream from a discharge.

biosphere: The portion of the earth and its atmosphere capable of supporting life.

biostabilizer: A machine used to convert solid waste into compost by grinding and aeration.

biota: All the species of plants and animals occurring within a certain area.

bloom: A proliferation of living algae and/or other aquatic plants on the surface of lakes or ponds. Blooms are frequently stimulated by phosphate enrichment.

BOD: See biochemical oxygen demand.

BOD_5: The amount of dissolved oxygen consumed in five days by biological processes breaking down organic matter in an effluent. See biochemical oxygen demand.

bog: Wet, spongy land usually poorly drained, highly acid and rich in plant residue.

boom: A floating device that is used to contain oil on a body of water.

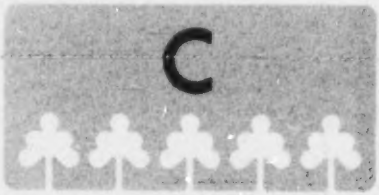
botanical pesticide: A plant-produced chemical used to control pests; for example, nicotine, strychnine or orpyrethrun.

brackish water: A mixture of fresh and salt water.

breeder: A nuclear reactor that produces more fuel than it consumes.

broadcast application: With respect to pesticides, the application of a chemical over an entire field, lawn or other area.

burial ground (graveyard): A place for burying unwanted radioactive materials to prevent radiation escape, the earth or water acting as a shield. Such materials must be placed in water-tight, noncorrodible containers so the radioactive material cannot leach out and invade underground water supplies.



cadmium: See heavy metals.

carbon dioxide (CO_2): A colorless, odorless, nonpoisonous gas that is a normal part of the ambient air. CO_2 is a product of fossil fuel combustion, and some researchers have theorized that excess CO_2 raises atmospheric temperatures.

carbon monoxide (CO): A colorless, odorless, highly toxic gas that is a normal byproduct of incomplete fossil fuel combustion. CO, one of the major air pollutants, can be harmful in small amounts if breathed over a certain period of time.

carcinogenic: Cancer producing.

catalytic converter: An air pollution abatement device that removes organic contaminants by oxidizing them into carbon dioxide and water through chemical reaction. Can be used to reduce nitrogen oxide emissions from motor vehicles.

caustic soda: Sodium hydroxide (NaOH), a strongly alkaline, caustic substance used as the cleaning agent in some detergents.

cells: With respect to solid waste dis-

posal, earthen compartments in which solid wastes are dumped, compacted and covered over daily with layers of earth.

centrifugal collector: Any of several mechanical systems using centrifugal force to remove aerosols from a gas stream.

cfs: Cubic feet per second, a measure of the amount of water passing a given point.

channelization: The straightening and deepening of streams to permit water to move faster, to reduce flooding or to drain marshy acreage for farming. However, channelization reduces the organic waste assimilation capacity of the stream and may disturb fish breeding and destroy the stream's natural beauty.

chemical oxygen demand (COD): A measure of the amount of oxygen required to oxidize organic and oxidizable inorganic compounds in water. The COD test, like the BOD test, is used to determine the degree of pollution in an effluent.

chemosterilant: A pesticide chemical that controls pests by destroying their ability to reproduce.

chilling effect: The lowering of the earth's temperature due to the increase of atmospheric particulates that inhibit penetration of the sun's energy.

chlorinated hydrocarbons: A class of generally long-lasting, broad-spectrum insecticides of which the best known is DDT, first used for insect control during World War II. Other similar compounds include aldrin, dieldrin, heptachlor, chlordane, lindane, endrin, mirex, benzene hexachloride (BHC), and toxaphene. The qualities of persistence and effectiveness against a wide variety of insect pests were long regarded as highly desirable in agriculture, public health and home uses. But later research has revealed that these same qualities may represent a potential hazard through accumulation in the food chain and persistence in the environment.

chlorination: The application of chlorine to drinking water, sewage or industrial waste for disinfection or oxidation of undesirable compounds.

chlorinator: A device for adding a chlorine-containing gas or liquid to drinking or waste water.

chlorine-contact chamber: In a waste treatment plant, a chamber in which effluent is disinfected by chlorine before it is discharged to the receiving waters.

chlorosis: Yellowing or whitening of normally green plant parts. It can be caused by disease organisms, lack of oxygen or nutrients in the soil or by various air pollutants.

chromium: See heavy metals.

chronic: Marked by long duration or frequent recurrence, as a disease.

clarification: In waste water treatment, the removal of turbidity and suspended solids by settling, often aided by centrifugal action and chemically induced coagulation.

clarifier: In waste water treatment, a settling tank which mechanically removes settleable solids from wastes.

coagulation: The clumping of particles in order to settle out impurities; often induced by chemicals such as lime or alum.

coastal zone: Coastal waters and adjacent lands that exert a measurable influence on the uses of the sea and its ecology.

COD: See chemical oxygen demand.

coefficient of haze (COH): A measurement of visibility interference in the atmosphere.

coffin: A thick-walled container (usually lead) used for transporting radioactive materials.

COH: See coefficient of haze.

coliform index: An index of the purity of water based on a count of its coliform bacteria.

coliform organism: Any of a number of organisms common to the intestinal tract of man and animals whose

presence in waste water is an indicator of pollution and of potentially dangerous bacterial contamination.

combined sewers: A sewerage system that carries both sanitary sewage and storm water runoff. During dry weather, combined sewers carry all waste water to the treatment plant. During a storm, only part of the flow is intercepted because of plant overloading; the remainder goes untreated to the receiving stream.

combustion: Burning. Technically, a rapid oxidation accompanied by the release of energy in the form of heat and light. It is one of the three basic contributing factors causing air pollution, the others are attrition and vaporization.

comminution: Mechanical shredding or pulverizing of waste, a process that converts it into a homogeneous and more manageable material. Used in solid waste management and in the primary stage of waste water treatment.

comminutor: A device that grinds solids to make them easier to treat.

compaction: Reducing the bulk of solid waste by rolling and tamping.

compost: Relatively stable decomposed organic material.

composting: A controlled process of degrading organic matter by microorganisms. (1) mechanical—a method in which the compost is continuously and mechanically mixed and aerated. (2) ventilated cell—compost is mixed and aerated by being dropped through a vertical series of ventilated cells. (3) windrow—an open-air method in which compostable material is placed in windrows, piles or ventilated bins or pits and occasionally turned or mixed. The process may be anaerobic or aerobic.

contact pesticide: A chemical that kills pests on contact with the body, rather than by ingestion (stomach poison).

contrails: Long narrow clouds caused by the disturbance of the atmosphere during passage of high-flying jets. Proliferation of contrails may cause changes in the weather.

coolant: A substance, usually liquid or gas, used for cooling any part of a reactor in which heat is generated, including the core, the reflector, shield and other elements that may be heated by absorption of radiation.

cooling tower: A device to remove excess heat from water used in industrial operations, notably in electric power generation.

core: The heart of a nuclear reactor where energy is released.

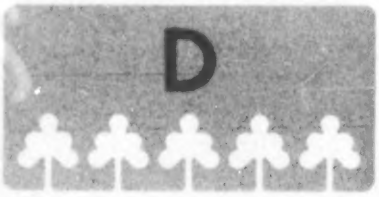
cover material: Soil that is used to cover compacted solid waste in a sanitary landfill.

cultural eutrophication: Acceleration by man of the natural aging process of bodies of water.

curie: A measure of radioactivity.

cutie-pie: A portable instrument equipped with a direct reading meter used to determine the level of radiation in an area.

cyclone collector: A device used to collect large-size particulates from polluted air by centrifugal force.



DDT: The first of the modern chlorinated hydrocarbon insecticides whose chemical name is 1,1,1-tricholoro-2,2-bis (p-chloriphenyl)-ethane. It has a half-life of 15 years, and its residues can become concentrated in the fatty tissues of certain organisms, especially fish. Because of its persistence in the environment and its ability to accumulate and magnify in the food chain, EPA has banned the registration and interstate sale of DDT for nearly all uses in the United States effective December 31, 1972.

decibel (dB): A unit of sound measurement.

decomposition: Reduction of the net energy level and change in chemical composition of organic matter because of the actions of aerobic or anaerobic microorganisms.

dermal toxicity: The ability of a pesticide chemical to poison an animal or human by skin absorption.

desalinization: Salt removal from sea or brackish water.

desiccant: A chemical agent that may be used to remove moisture from plants or insects causing them to wither and die.

detergent: Synthetic washing agent that, like soap, lowers the surface tension of water, emulsifies oils and holds dirt in suspension. Environmentalists have criticized detergents because most contain large amounts of phosphorus-containing compounds that contribute to the eutrophication of waterways.

diatomaceous earth (diatomite): A fine siliceous material resembling chalk used in waste water treatment plants to filter sewage effluent to remove solids. May also be used as inactive ingredients in pesticide formulations applied as dust or powder.

diffused air: A type of sewage aeration. Air is pumped into the sewage through a perforated pipe.

digester: In a waste water treatment plant, a closed tank that decreases the volume of solids and stabilizes raw sludge by bacterial action.

digestion: The biochemical decomposition of organic matter. Digestion of sewage sludge takes place in tanks where the sludge decomposes, resulting in partial gasification, liquefaction and mineralization of pollutants.

dilution ratio: The ratio of the volume of water of a stream to the volume of incoming waste. The capacity of a stream to assimilate waste is partially dependent upon the dilution ratio.

disinfection: Effective killing by chemical or physical processes of all organisms capable of causing infectious disease. Chlorination is the disinfection method commonly employed in sewage treatment processes.

dispersant: A chemical agent used to break up concentrations of organic material. In cleaning oil spills, dispersants are used to disperse oil from the water surface.

dissolved oxygen (DO): The oxygen dissolved in water or sewage. Adequately dissolved oxygen is necessary for the life of fish and other aquatic organisms and for the prevention of offensive odors. Low dissolved oxygen concentrations generally are due to discharge of excessive organic solids having high BOD, the result of inadequate waste treatment.

dissolved solids: The total amount of dissolved material, organic and inorganic, contained in water or wastes. Excessive dissolved solids make water unpalatable for drinking and unsuitable for industrial uses.

distillation: The removal of impurities from liquids by boiling. The steam, condensed back into liquid, is almost pure water; the pollutants remain in the concentrated residue.

dose: In radiology, the quantity of energy or radiation absorbed.

dosimeter (dosemeter): An instrument used to measure the amount of radiation a person has received.

dredging: A method for deepening streams, swamps or coastal waters by scraping and removing solids from the bottom. The resulting mud is usually deposited in marshes in a process called filling. Dredging and filling can disturb natural ecological cycles. For example, dredging can destroy oyster beds and other aquatic life; filling can destroy the feeding and breeding grounds for many fish species.

dry limestone process: A method of controlling air pollution caused by sulfur oxides. The polluted gases are exposed to limestone which combines with oxides of sulfur to form manageable residues.

dump: A land site where solid waste is disposed of in a manner that does not protect the environment.

dust: Fine-grain particulate matter that is capable of being suspended in air.

dustfall jar: An open-mouthed container used to collect large particles that fall out of the air. The particles are measured and analyzed.

dystrophic lakes: Lakes between eutrophic and swamp stages of aging. Such lakes are shallow and have high humus content, high organic matter content, low nutrient availability and high BOD.

ecological impact: The total effect of an environmental change, either natural or man-made, on the ecology of the area.

ecology: The interrelationships of living things to one another and to their environment or the study of such interrelationships.

economic poisons: Those chemicals used to control insects, rodents, plant diseases, weeds and other pests, and also to defoliate economic crops such as cotton.

ecosphere: See biosphere.

ecosystem: The interacting system of a biological community and its nonliving environment.

effluent: A discharge of pollutants into the environment, partially or completely treated or in its natural state. Generally used in regard to discharges into waters.

electrodialysis: A process that uses electrical current and an arrangement of permeable membranes to separate soluble minerals from water. Often used to desalinize salt or brackish water.

electrostatic precipitator: An air pollution control device that removes particulate matter by imparting an electrical charge to particles in a gas stream for mechanical collection on an electrode.

emergency episode: See air pollution episode.

emission: See effluent. (Generally used in regard to discharges into air.)

emission factor: The average amount of a pollutant emitted from each type of polluting source in relation to a specific amount of material processed. For example, an emission factor for a blast furnace (used to make iron) would be a number of pounds of particulates per ton of raw materials.

emission inventory: A list of air pollutants emitted into a community's atmosphere, in amounts (usually tons) per day, by type of source. The emission inventory is basic to the establishment of emission standards.

emission standard: The maximum amount of a pollutant legally permitted to be discharged from a single source, either mobile or stationary.

enrichment: The addition of nitrogen, phosphorus and carbon compounds or other nutrients into a lake or other waterway that greatly increases the growth potential for algae and other aquatic plants. Most frequently, enrichment results from the inflow of sewage effluent or from agricultural runoff.

environment: The sum of all external conditions and influences affecting the life, development and, ultimately, the survival of an organism.

environmental impact statement: A document prepared by a Federal agency on the environmental impact of its proposals for legislation and other major actions significantly affecting the quality of the human environment. Environmental impact statements are used as tools for decision making and are required by the National Environmental Policy Act.

epidemiology: The study of diseases as they affect populations.

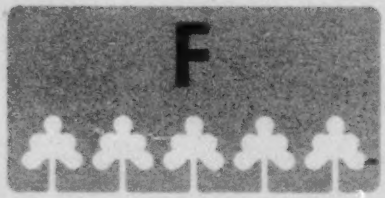
erosion: The wearing away of the land surface by wind or water. Erosion occurs naturally from weather or run-off but is often intensified by man's land-clearing practices.

estuaries: Areas where the fresh water meets salt water. For example, bays, mouths of rivers, salt marshes and lagoons. Estuaries are delicate ecosystems; they serve as nurseries, spawning and feeding grounds for a large group of marine life and provide shelter and food for birds and wildlife.

eutrophication: The normally slow aging process by which a lake evolves into a bog or marsh and ultimately assumes a completely terrestrial state and disappears. During eutrophication the lake becomes so rich in nutritive compounds, especially nitrogen and phosphorus, that algae and other microscopic plant life become superabundant, thereby "choking" the lake, and causing it eventually to dry up. Eutrophication may be accelerated by many human activities.

eutrophic lakes: Shallow lakes, weed-choked at the edges and very rich in nutrients. The water is characterized by large amounts of algae, low water transparency, low dissolved oxygen and high BOD.

evaporation ponds: Shallow, artificial ponds where sewage sludge is pumped, permitted to dry and either removed or buried by more sludge.



fabric filters: A device for removing dust and particulate matter from industrial emissions much like a home vacuum cleaner bag. The most common use of fabric filters is the baghouse.

fecal coliform bacteria: A group of organisms common to the intestinal tracts of man and of animals. The presence of fecal coliform bacteria in water is an indicator of pollution and of potentially dangerous bacterial contamination.

feedlot: A relatively small, confined land area for raising cattle. Although an economical method of fattening beef, feedlots concentrate a large amount of animal wastes in a small area. This excrement cannot be handled by the soil as it could be if the cattle were scattered on open range. In addition, runoff from feedlots contributes excessive quantities of nitrogen, phosphorus and potassium to nearby waterways, thus contributing to eutrophication.

fen: A low-lying land area partly covered by water.

filling: The process of depositing dirt and mud in marshy areas to create more land for real estate development. Filling can disturb natural ecological cycles. See dredging.

film badge: A piece of masked photographic film worn like a badge by nuclear workers to monitor an exposure to radiation. Nuclear radiation darkens the film.

filtration: In waste water treatment, the mechanical process that removes particulate matter by separating water from solid material usually by passing it through sand.

floc: A clump of solids formed in sewage by biological or chemical action.

flocculation: In waste water treatment, the process of separating suspended solids by chemical creation of clumps or flocs.

flowmeter: In waste water treatment, a meter that indicates the rate at which waste water flows through the plant.

flue gas: A mixture of gases resulting from combustion and emerging from a chimney. Flue gas includes nitrogen

oxides, carbon oxides, water vapor and often sulfur oxides or particulates.

fluorides: Gaseous, solid or dissolved compounds containing fluorine, emitted into the air or water from a number of industrial processes. Fluorides in the air are a cause of vegetation damage and, indirectly, of livestock damage.

flume: A channel, either natural or man-made, which carries water.

fly ash: All solids, including ash, charred paper, cinders, dust, soot or other partially incinerated matter, that are carried in a gas stream.

fog: Liquid particles formed by condensation of vaporized liquids.

fogging: The application of a pesticide by rapidly heating the liquid chemical, thus forming very fine droplets with the appearance of smoke. Fogging is often used to destroy mosquitoes and blackflies.

food waste: Animal and vegetable waste resulting from the handling, storage, sale, preparation, cooking and serving of foods; commonly called garbage.

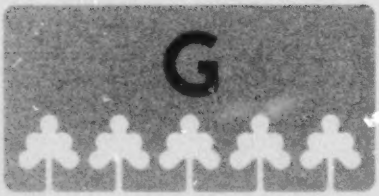
fossil fuels: Coal, oil and natural gas; so-called because they are derived from the remains of ancient plant and animal life.

fume: Tiny solid particles commonly formed by the condensation of vapors of solid matter.

fumigant: A pesticide that is burned or evaporated to form a gas or vapor that destroys pests. Fumigants are often used in buildings or greenhouses.

fungi: Small, often microscopic plants without chlorophyll. Some fungi infect and cause disease in plants or animals; other fungi are useful in stabilizing sewage or in breaking down wastes for compost.

fungicide: A pesticide chemical that kills fungi or prevents them from causing diseases, usually on plants of economic importance. See pesticide.



game fish: Those species of fish sought by sports fishermen; for example, salmon, trout, black bass, striped bass, etc. Game fish are usually more sensitive to environmental changes and water quality degradation than "rough" fish.

gamma ray: Waves of radiant nuclear energy. Gamma rays are the most penetrating of the three types of radiation and are best stopped by dense materials such as lead.

garbage: See food waste.

garbage grinding: A method of grinding food waste by a household disposal, for example, and washing it into the sewer system. Ground garbage then must be disposed of as sewage sludge.

Geiger counter: An electrical device that detects the presence of radioactivity.

generator: A device that converts mechanical energy into electrical energy.

germicide: A chemical or agent that kills microorganisms such as bacteria and prevents them from causing disease. Such compounds must be registered as pesticides with EPA.

grain: A unit of weight equivalent to 65 milligrams or 2/1,000 of an ounce.

grain loading: The rate of emission of particulate matter from a polluting source. Measurement is made in grains of particulate matter per cubic foot of gas emitted.

green belts: Certain areas restricted from being used for buildings and houses; they often serve as separating buffers between pollution sources and concentrations of population.

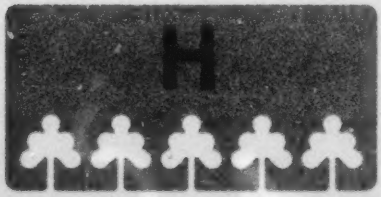
greenhouse effect: The heating effect of the atmosphere upon the earth. Light waves from the sun pass through the

air and are absorbed by the earth. The earth then reradiates this energy as heat waves that are absorbed by the air, specifically by carbon dioxide. The air thus behaves like glass in a greenhouse, allowing the passage of light but not of heat. Thus many scientists theorize that an increase in the atmospheric concentration of CO_2 can eventually cause an increase in the earth's surface temperature.

ground cover: Grasses or other plants grown to keep soil from being blown or washed away.

groundwater: The supply of freshwater under the earth's surface in an aquifer or soil that forms the natural reservoir for man's use.
(See surface water)

groundwater runoff: Groundwater that is discharged into a stream channel as spring or seepage water.



habitat: The sum total of environmental conditions of a specific place that is occupied by an organism, a population or a community.

half-life: The time it takes certain materials, such as persistent pesticides or radioactive isotopes, to lose half their strength. For example, the half-life of DDT is 15 years; the half-life of radium is 1,580 years.

hammermill: A broad category of high-speed equipment that uses pivoted or fixed hammers or cutters to crush, grind, chip or shred solid wastes.

hard water: Water containing dissolved minerals such as calcium, iron and magnesium. The most notable characteristic of hard water is its inability to lather soap. Some pesticide chemicals will curdle or settle out when added to hard water.

hazardous air pollutant: According to law, a pollutant to which no ambient air quality standard is applicable and that may cause or contribute to an increase in mortality or in serious illness. For example, asbestos, beryllium and mercury have been declared hazardous air pollutants.

heat island effect. An air circulation problem peculiar to cities. Tall buildings, heat from pavements and concentrations of pollutants create a haze dome that prevents rising hot air from being cooled at its normal rate. A self-contained circulation system is put in motion that can be broken by relatively strong winds. If such winds are absent, the heat island can trap high concentrations of pollutants and present a serious health problem.

heating season: The coldest months of the year when pollution emissions are higher in some areas because of increased fossil-fuel consumption.

heavy metals: Metallic elements with high molecular weights, generally toxic in low concentrations to plant and animal life. Such metals are often residual in the environment and exhibit biological accumulation. Examples include mercury, chromium, cadmium, arsenic and lead.

herbicide: A pesticide chemical used to destroy or control the growth of weeds, bush and other undesirable plants. See pesticide.

herbivore: An organism that feeds on vegetation.

heterotrophic organism: Organisms dependent on organic matter for food.

high density polyethylene: A material often used in the manufacture of plastic bottles that produces toxic fumes if incinerated.

hi-volume sampler: A device used in the measurement and analysis of suspended particulate pollution. Also called a Hi-Vol.

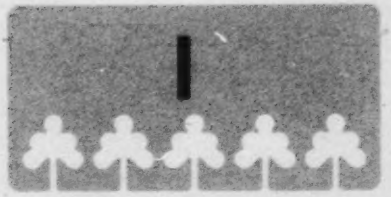
hot: A colloquial term meaning highly radioactive.

humus: Decomposed organic material.

hydrocarbons: A vast family of compounds containing carbon and hydrogen in various combinations, found especially in fossil fuels. Some hydrocarbons are major air pollutants, some may be carcinogenic and others contribute to photochemical smog.

hydrogen sulfide (H_2S): A malodorous gas made up of hydrogen and sulfur with the characteristic odor of rotten eggs. It is emitted in the natural decomposition of organic matter and is also the natural accompaniment of advanced stages of eutrophication. H_2S is also a byproduct of refinery activity and the combustion of oil during power plant operations. In heavy concentrations, it can cause illness.

hydrology: The science dealing with the properties, distribution and circulation of water and snow.



impedance: The rate at which a substance can absorb and transmit sound.

implementation plan: A document of the steps to be taken to ensure attainment of environmental quality standards within a specified time period. Implementation plans are required by various laws.

impoundment: A body of water, such as a pond, confined by a dam, dike, floodgate or other barrier.

incineration: The controlled process by which solid, liquid or gaseous combustible wastes are burned and changed into gases; the residue produced contains little or no combustible material.

incinerator: An engineered apparatus used to burn waste substances and in which all the combustion factors—temperature, retention time, turbulence and combustion air—can be controlled.

inert gas: A gas that does not react with other substances under ordinary conditions.

inertial separator: An air pollution control device that uses the principle of inertia to remove particulate matter from a stream of air or gas.

infiltration: The flow of a fluid into a substance through pores or small openings. Commonly used in hydrology to denote the flow of water into soil material.

infiltration/inflow: Total quantity of water entering a sewer system. Infiltration means entry through such sources as defective pipes, pipe joints, connections, or manhole walls. Inflow signifies discharge into the sewer system through service connections from such sources as area or foundation drainage, springs and swamps, storm waters, street wash waters, or sewers.

inoculum: Material such as bacteria placed in compost or other medium to initiate biological action.

integrated pest control: A system of managing pests by using biological, cultural and chemical means.

interceptor sewers: Sewers used to collect the flows from main and trunk sewers and carry them to a central point for treatment and discharge. In a combined sewer system, where street runoff from rains is allowed to enter the system along with sewage, interceptor sewers allow some of the sewage to flow untreated directly into the receiving stream, to prevent the plant from being overloaded.

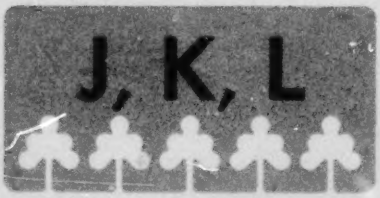
interstate carrier water supply: A water supply whose water may be used for drinking or cooking purposes aboard common carriers (planes, trains, buses and ships) operating interstate. Interstate carrier water supplies are regulated by the Federal government.

interstate waters: According to law, waters defined as: (1) rivers, lakes and other waters that flow across or form a part of State or international boundaries; (2) waters of the Great Lakes; (3) coastal waters — whose scope has been defined to include ocean waters seaward to the territorial limits and waters along the coastline (including inland streams) influenced by the tide.

inversion: An atmospheric condition where a layer of cool air is trapped by a layer of warm air so that it cannot rise. Inversions spread polluted air horizontally rather than vertically so that contaminating substances cannot be widely dispersed. An inversion of several days can cause an air pollution episode.

ionization chamber: A device roughly similar to a Geiger counter that reveals the presence of ionizing radiation.

isotope: A variation of an element having the same atomic number as the element itself, but having a different atomic weight because of a different number of neutrons. Different isotopes of the same element have different radioactive behavior.



lagoon: In waste water treatment, a shallow pond usually man-made where sunlight, bacterial action and oxygen interact to restore waste water to a reasonable state of purity.

landfill: (See Sanitary Landfill).

lateral sewers: Pipes running underneath city streets that collect sewage from homes or businesses.

LC_{50}: Median lethal concentration, a standard measure of toxicity. LC_{50} indicates the concentration of a substance that will kill 50 percent of a group of experimental insects or animals.

leachate: Liquid that has percolated through solid waste or other mediums and has extracted dissolved or suspended materials from it.

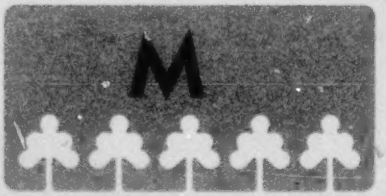
leaching: The process by which soluble materials in the soil, such as nutrients, pesticide chemicals or contaminants, are washed into a lower layer of soil or are dissolved and carried away by water.

lead: A heavy metal that may be hazardous to human health if breathed or ingested.

life cycle: The phases, changes or stages an organism passes through during its lifetime.

lift: In a sanitary landfill, a compacted layer of solid waste and the top layer of cover material.

limnology: The study of the physical, chemical, meteorological and biological aspects of fresh waters.



marsh: A low-lying tract of soft, wet land that provides an important ecosystem for a variety of plant and animal life but often is destroyed by dredging and filling.

masking: Covering over of one sound or element by another. Quantitatively, masking is the amount the audibility threshold of one sound is raised by the presence of a second masking sound. Also used in regard to odors.

mechanical turbulence: The erratic movement of air caused by local obstructions such as buildings.

mercury: A heavy metal, highly toxic if breathed or ingested. Mercury is residual in the environment, showing biological accumulation in all aquatic organisms, especially fish and shell fish. Chronic exposure to airborne mercury can have serious effects on the central nervous system.

methane: Colorless, nonpoisonous and flammable gaseous hydrocarbon. Methane, (CA_4), is emitted by marshes and by dumps undergoing anaerobic decomposition.

mgd: Millions of gallons per day. Mgd is commonly used to express rate of flow.

microbes: Minute plant or animal life. Some disease-causing microbes exist in sewage.

mist: Liquid particles in air formed by condensation of vaporized liquids. Mist particles vary from 500 to 40 microns in size. By comparison, fog particles are smaller than 40 microns in size.

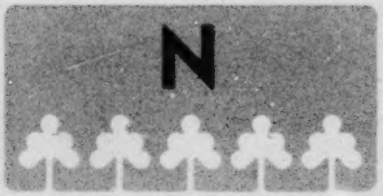
mixed liquor: A mixture of activated sludge and water containing organic matter undergoing activated sludge treatment in the aeration tank.

mobile source: A moving source of air pollution such as an automobile.

monitoring: Periodic or continuous determination of the amount of pollutants or radioactive contamination present in the environment.

muck soils: Soils made from decaying plant materials.

mulch: A layer of wood chips, dry leaves, straw, hay, plastic strips or other material placed on the soil around plants to retain moisture, to prevent weeds from growing and to enrich soil.



natural gas: A fuel gas occurring naturally in certain geologic formation. Natural gas is usually a combustible mixture of methane and hydrocarbons.

natural selection: The natural process by which the organisms best adapted to their environment survive and those less well adapted are eliminated.

necrosis: Death of plant cells resulting in a discolored, sunken area or death of the entire plant.

nitric oxide (NO): A gas formed in great part from atmospheric nitrogen and oxygen when combustion takes place under high temperature and high pressure, as in internal combustion engines. NO is not itself a pollutant; however, in the ambient air, it converts to nitrogen dioxide, a major contributor to photochemical smog.

nitrogen dioxide (NO_2): A compound produced by the oxidation of nitric oxide in the atmosphere; a major contributor to photochemical smog.

nitrogenous wastes: Wastes of animal or plant origin that contain a significant concentration of nitrogen.

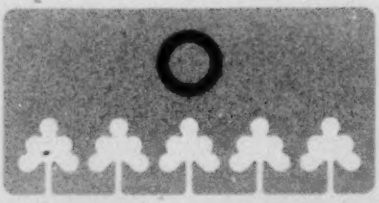
NO: A notation meaning oxides of nitrogen. See nitric oxide.

noise: Any undesired audible signal. Thus, in acoustics, noise is any undesired sound.

NTA: Nitrilotriacetic acid, a compound once used to replace phosphates in detergents.

nuclear power plant: Any device, machine or assembly that converts nuclear energy into some form of useful power, such as mechanical or electrical power. In a nuclear electric power plant, heat produced by a reactor is generally used to make steam to drive a turbine that in turn drives an electric generator.

nutrients: Elements or compounds essential as raw materials for organism growth and development; for example, carbon, oxygen, nitrogen and phosphorus.



oil spill: The accidental discharge of oil into oceans, bays or inland water-

ways. Methods of oil spill control include chemical dispersion, combustion, mechanical containment and absorption.

oligotrophic lakes: Deep lakes that have a low supply of nutrients and thus contain little organic matter. Such lakes are characterized by high water transparency and high dissolved oxygen.

opacity: Degree of obscuration of light. For example, a window has zero opacity; a wall is 100 percent opaque. The Ringelmann system of evaluating smoke density is based on opacity.

open burning: Uncontrolled burning of wastes in an open dump.

open dump: See dump.

organic: Referring to or derived from living organisms. In chemistry, any compound containing carbon.

organism: Any living human, plant or animal.

organophosphates: A group of pesticide chemicals containing phosphorus, such as malathion and parathion, intended to control insects. These compounds are short-lived and, therefore, do not normally contaminate the environment. However, some organophosphates, such as parathion, are extremely toxic when initially applied and exposure to them can interfere with the normal processes of the nervous system, causing convulsions and eventually death. Malathion, on the other hand, is low in toxicity and relatively safe for humans and animals; it is a common ingredient in household insecticide products.

outfall: The mouth of a sewer, drain or conduit where an effluent is discharged into the receiving waters.

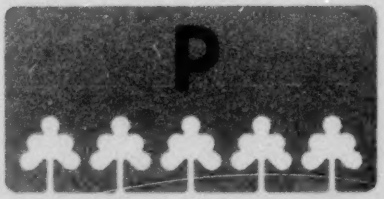
overfire air: Air forced into the top of an incinerator to fan the flame.

oxidant: Any oxygen containing substance that reacts chemically in the air to produce new substances. Oxidants are the primary contributors to photochemical smog.

oxidation: A chemical reaction in which oxygen unites or combines with other elements. Organic matter is oxidized by the action of aerobic bacteria; thus oxidation is used in waste water treatment to break down organic wastes.

oxidation pond: A man-made lake or pond in which organic wastes are reduced by bacterial action. Often oxygen is bubbled through the pond to speed the process.

ozone (O_3): A pungent, colorless, toxic gas. Ozone is one component of photochemical smog and is considered a major air pollutant.



package plant: A prefabricated or prebuilt waste water treatment plant.

packed tower: An air pollution control device in which polluted air is forced upward through a tower packed with crushed rock or wood chips while a liquid is sprayed downward on the packing material. The pollutants in the air stream either dissolve or chemically react with the liquid.

PAN: Peroxyacetyl nitrate, a pollutant created by the action of sunlight on hydrocarbons and nitrogen oxides in the air. PANS are an integral part of photochemical smog.

particulates: Finely divided solid or liquid particles in the air or in an emission. Particulates include dust, smoke, fumes, mist, spray and fog.

particulate loading: The introduction of particulates into the ambient air.

pathogenic: Causing or capable of causing disease.

PCBs: Polychlorinated biphenyls, a group of organic compounds used in the manufacture of plastics. In the en-

vironment, PCBs exhibit many of the same characteristics as DDT and may, therefore, be confused with that pesticide. PCBs are highly toxic to aquatic life, they persist in the environment for long periods of time, and they are biologically accumulative.

peat: Partially decomposed organic material.

percolation: Downward flow or infiltration of water through the pores or spaces of a rock or soil.

persistent pesticides: Pesticides that will be present in the environment for longer than one growing season or one year after application.

pesticide: An agent used to control pests. This includes insecticides for use against harmful insects; herbicides for weed control; fungicides for control of plant diseases; rodenticides for killing rats, mice, etc.; and germicides used in disinfectant products, algaecides, slimicides, etc. Some pesticides can contaminate water, air or soil and accumulate in man, animals and the environment, particularly if they are misused. Certain of these chemicals have been shown to interfere with the reproductive processes of predatory birds and possibly other animals.

pesticide tolerance: A scientifically and legally established limit for the amount of chemical residue that can be permitted to remain in or on a harvested food or feed crop as a result of the application of a chemical for pest-control purposes. Such tolerances or safety levels, established federally by EPA, are set well below the point at which residues might be harmful to consumers.

pH: A measure of the acidity or alkalinity of a material, liquid or solid. pH is represented on a scale of 0 to 14 with 7 representing a neutral state, 0 representing the most acid and 14, the most alkaline.

phenols: A group of organic compounds that in very low concentrations produce a taste and odor problem in water. In higher concentrations, they are toxic to aquatic life. Phenols are byproducts of petroleum refining, tanning and textile, dye and resin manufacture.

phosphates: The salt or ester of a phosphoric acid.

phosphorus: An element that while essential to life, contributes to the eutrophication of lakes and other bodies of water.

photochemical oxidants: Secondary pollutants formed by the action of sunlight on the oxides of nitrogen and hydrocarbons in the air; they are the primary contributors to photochemical smog.

photochemical smog: Air pollution associated with oxidants rather than with sulfur oxides, particulates, etc. Produces necrosis, chlorosis and growth alterations in plants and is an eye and respiratory irritant in humans.

phytoplankton: The plant portion of plankton.

phytotoxic: Injurious to plants.

pig: A container usually made of lead used to ship or store radioactive materials.

pile: A nuclear reactor.

plankton: The floating or weakly swimming plant and animal life in a body of water, often microscopic in size.

plume: The visible emission from a flue or chimney.

point source: In air pollution, a stationary source of a large individual emission, generally of an industrial nature. This is a general definition; point source is legally and precisely defined in Federal regulations. See area source.

pollen: A fine dust produced by plants; a natural or background air pollutant.

pollutant: Any introduced gas, liquid or solid that makes a resource unfit for a specific purpose.

pollution: The presence of matter or or energy whose nature, location or quantity produces undesired environmental effects.

polyelectrolytes: Synthetic chemicals used to speed flocculation of solids in sewage.

polyvinyl chloride: (PVC). A common plastic material that releases hydrochloric acid when burned.

potable water: Water suitable for drinking or cooking purposes from both health and aesthetic considerations.

ppm: Parts per million. The unit commonly used to represent the degree of pollutant concentration where the concentrations are small. Larger concentrations are given in percentages. Thus BOD is represented in ppm while suspended solids in water are expressed in percentages. In air, ppm is usually a volume/volume ratio; in water, a weight/volume ratio.

precipitate—A solid that separates from a solution because of some chemical or physical change or the formation of such a solid.

precipitators: In pollution control work, any of a number of air pollution control devices usually using mechanical/electrical means to collect particulates from an emission.

pretreatment: In waste water treatment, any process used to reduce pollution load before the waste water is introduced into a main sewer system or delivered to a treatment plant for substantial reduction of the pollution load.

primary treatment: The first stage in waste water treatment in which substantially all floating or settleable solids are mechanically removed by screening and sedimentation.

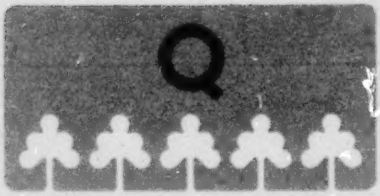
process weight: The total weight of all materials, including fuels, introduced into a manufacturing process. The process weight is used to calculate the allowable rate of emission of pollutant matter from the process.

pulverization: The crushing or grinding of material into small pieces.

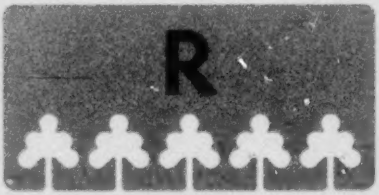
pumping station: A station at which sewage is pumped to a higher level. In most sewer systems pumping is unnecessary; waste water flows by gravity to the treatment plant.

putrescible: Capable of being decomposed by microorganisms with sufficient rapidity to cause nuisances from odors, gases, etc. For example, kitchen wastes or dead animals.

pyrolysis: Chemical decomposition by extreme heat.



quench tank: A water-filled tank used to cool incinerator residues.



rad: A unit of measurement of any kind of radiation absorbed by man.

radiation: The emission of fast atomic particles or rays by the nucleus of an atom. Some elements are naturally radioactive while others become radioactive after bombardment with neutrons or other particles. The three major forms of radiation are alpha, beta and gamma.

radiation standards: Regulations that include exposure standards, permissible concentrations and regulations for transportation.

radiobiology: The study of the principles, mechanisms and effects of radiation on living matter.

radioecology: The study of the effects of radiation on species of plants and animals in natural communities.

radioisotopes: Radioactive isotopes. Radioisotopes such as cobalt-60 are used in the treatment of disease.

rasp: A device used to grate solid waste into a more manageable material, ridding it of much of its odor.

raw sewage: Untreated domestic or commercial waste water.

receiving waters: Rivers, lakes, oceans or other bodies that receive treated or untreated waste waters.

recycling: The process by which waste materials are transformed into new products in such a manner that the original products may lose their identity.

red tide: A proliferation or bloom of a certain type of plankton with red-to-orange coloration, that often causes massive fish kills. Though they are a natural phenomenon, blooms are believed to be stimulated by phosphorus and other nutrients discharged into waterways by man.

refuse: See solid waste.

refuse reclamation: The process of converting solid waste to saleable products. For example, the composting of organic solid waste yields a saleable soil conditioner.

rem: A measurement of radiation dose to the internal tissue of man. (Acronym for roentgen equivalent man.)

rep: A unit of measurement of any kind of radiation absorbed by man.

reservoir: A pond, lake, tank or basin, natural or man-made, used for the storage, regulation and control of water.

resource recovery: The process of obtaining materials or energy, particularly from solid waste.

reverberation: The persistence of sound in an enclosed space after the sound source has stopped.

reverse osmosis: An advanced method of waste treatment relying on a semi-permeable membrane to separate waters from pollutants.

Ringelmann chart: A series of illustrations ranging from light grey to black used to measure the opacity of smoke emitted from stacks and other sources. The shades of grey simulate various smoke densities and are assigned numbers ranging from one to five. Ringelmann No. 1 is equivalent to 20 percent dense; No. 5 is 100 percent dense. Ringelmann charts are used in the setting and enforcement of emission standards.

riparian rights: Rights of a land owner to the water on or bordering his property, including the right to prevent diversion or misuse of upstream water.

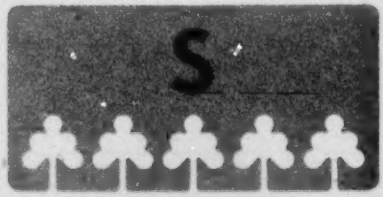
river basin: The total area drained by a river and its tributaries.

rodenticide: A chemical or agent used to destroy or prevent damage by rats or other rodent pests. See pesticide.

rough fish: Those fish species considered to be of poor fighting quality when taken on tackle or of poor eating quality; for example, gar, suckers, etc. Most rough fish are more tolerant of widely changing environmental conditions than are game fish.

rubbish: A general term for solid waste —excluding food waste and ashes— taken from residences, commercial establishments and institutions.

runoff: The portion of rainfall, melted snow or irrigation water that flows across ground surface and eventually is returned to streams. Runoff can pick up pollutants from the air or the land and carry them to the receiving waters.



salinity: The degree of salt in water.

salt water intrusion: The invasion of salt water into a body of fresh water, occurring in either surface or groundwater bodies. When this invasion is caused by oceanic waters, it is called sea water intrusion.

salvage: The utilization of waste materials.

sanitation: The control of all the factors in man's physical environment that exercise or can exercise a deleterious effect on his physical development, health and survival.

sanitary landfill: A site for solid waste disposal using sanitary landfilling techniques.

sanitary landfilling: An engineered method of solid waste disposal on land in

a manner that protects the environment; waste is spread in thin layers, compacted to the smallest practical volume and covered with soil at the end of each working day.

sanitary sewers: Sewers that carry only domestic or commercial sewage. Storm water runoff is carried in a separate system. See sewer.

scrap: Discarded or rejected materials that result from manufacturing or fabricating operations and are suitable for reprocessing.

screening: The removal of relatively coarse floating and suspended solids by straining through racks or screens.

scrubber: An air pollution control device that uses a liquid spray to remove pollutants from a gas stream by absorption or chemical reaction. Scrubbers also reduce the temperature of the emission.

secondary treatment: Waste water treatment, beyond the primary stage, in which bacteria consume the organic parts of the wastes. This biochemical action is accomplished by use of trickling filters or the activated sludge process. Effective secondary treatment removes virtually all floating and settleable solids and approximately 90 percent of both BOD_5 and suspended solids. Customarily, disinfection by chlorination is the final stage of the secondary treatment process.

sedimentation: In waste water treatment, the settling out of solids by gravity.

sedimentation tanks: In waste water treatment, tanks where the solids are allowed to settle or to float as scum. Scum is skimmed off; settled solids are pumped to incinerators, digesters, filters or other means of disposal.

seepage: Water that flows through the soil.

segment: A portion of a river basin, the surface waters of which have common hydrologic characteristic (or flow regulation patterns); common natural, physical, chemical, and biological processes and common reactions to external stresses such as discharging of pollutants.

selective herbicide: A pesticide intended to kill only certain types of plants, especially broad-leafed weeds, and not harm other plants such as farm crops or lawn grasses. The leading herbicide in the United States is 2,4-D. A related but stronger chemical used mostly for brush control on range, pasture, and forest lands and on utility or highway rights-of-way is 2,4,5-T. Uses of the latter chemical have been somewhat restricted because of laboratory evidence that it or a dioxin contaminant in 2,4,5-T can cause birth defects in test animals.

senescence: The process of growing old. Sometimes used to refer to lakes nearing extinction.

septic tank: An underground tank used for the deposition of domestic wastes. Bacteria in the wastes decompose the organic matter, and the sludge settles to the bottom. The effluent flows through drains into the ground. Sludge is pumped out at regular intervals.

settleable solids: Bits of debris and fine matter heavy enough to settle out of waste water.

settling chamber: In air pollution control, a low-cost device used to reduce the velocity of flue gases usually by means of baffles, promoting the settling of fly ash.

settling tank: In waste water treatment, a tank or basin in which settleable solids are removed by gravity.

sewage: The total of organic waste and waste water generated by residential and commercial establishments.

sewage lagoon: See lagoon.

sewer: Any pipe or conduit used to collect and carry away sewage or stormwater runoff from the generating source to treatment plants or receiving streams. A sewer that conveys household and commercial sewage is called a sanitary sewer. If it transports runoff from rain or snow, it is called a storm sewer. Often storm water runoff and sewage are transported in the same system or combined sewers.

sewerage: The entire system of sewage collection, treatment and disposal. Also applies to all effluent carried by sewers whether it is sanitary sewage, industrial wastes or storm water runoff.

shield: A wall that protects workers from harmful radiation released by radioactive materials.

silt: Finely divided particles of soil or rock. Often carried in cloudy suspension in water and eventually deposited as sediment.

sinking: A method of controlling oil spills that employs an agent to entrap oil droplets and sink them to the bottom of the body of water. The oil and sinking agent are eventually biologically degraded.

skimming: The mechanical removal of oil or scum from the surface of water.

sludge: The construction of solids removed from sewage during waste water treatment. Sludge disposal is then handled by incineration, dumping or burial.

smog: Generally used as an equivalent of air pollution, particularly associated with oxidants.

smoke: Solid particles generated as a result of the incomplete combustion of materials containing carbon.

SO_x: A symbol meaning oxides of sulfur.

soft detergents: Biodegradable detergents.

soil conditioner: A biologically stable organic material such as humus or compost that makes soil more amenable to the passage of water and to the distribution of fertilizing material, providing a better medium for necessary soil bacteria growth.

solid waste: Useless, unwanted or discarded material with insufficient liquid content to be free flowing. Also see waste. (1) agricultural—solid waste that results from the raising and slaughtering of animals, and the processing of animal products and orchard and field crops. (2) commercial —waste generated by stores, offices and other activities that do not actually turn out a product. (3) industrial—waste that results from industrial processes and manufacturing. (4) institutional — waste originating from educational, health care and research facilities. (5) municipal—residential and commercial solid waste generated within a community. (6) pesticide—the residue from the manufacturing, handling or use of chemicals intended for killing plant and animal pests. (7) residential—waste that normally originates in a residential environment. Sometimes called domestic solid waste.

solid waste disposal: The ultimate disposition of refuse that cannot be salvaged or recycled.

solid waste management: The purposeful, systematic control of the generation, storage, collection, transport, separation, processing, recycling, recovery and disposal of solid wastes.

sonic boom: The tremendous booming sound produced as a vehicle, usually a supersonic jet airplane, exceeds the speed of sound, and the shock wave reaches the ground.

soot: Agglomerations of tar-impregnated carbon particles that form when carbonaceous-material does not undergo complete combustion.

sorption: A term including both adsorbtion and absorption. Sorption is basic to many processes used to remove gaseous and particulate pollutants from an emission and to clean up oil spills.

spoil: Dirt or rock that has been removed from its original location, specifically materials that have been dredged from the bottoms of waterways.

stabilization: The process of converting active organic matter in sewage sludge or solid wastes into inert, harmless material.

stabilization ponds: See lagoon, oxidation pond.

stable air: An air mass that remains in the same position rather than moving in its normal horizontal and vertical directions. Stable air does not disperse pollutants and can lead to high build-ups of air pollution.

stack: A smokestack; a vertical pipe or flue designed to exhaust gases and suspended particulate matter.

perature difference between the gases and the atmosphere.

stagnation: Lack of wind in an air mass or lack of motion in water. Both cases tend to entrap and concentrate pollutants.

stationary source: A pollution emitter that is fixed rather than moving as an automobile.

storm sewer: A conduit that collects and transports rain and snow runoff back to the ground water. In a separate sewerage system, storm sewers are entirely separate from those carrying domestic and commercial waste water.

stratification: Separating into layers.

strip mining: A process in which rock and top soil strata overlying ore or fuel deposits are scraped away by mechanical shovels. Also known as surface mining.

sulfur dioxide (SO_2) A heavy, pungent, colorless gas formed primarily by the combustion of fossil fuels. SO_2 damages the respiratory tract as well as vegetation and materials and is considered a major air pollutant.

sump: A depression or tank that serves as a drain or receptacle for liquids for salvage or disposal.

surface water: Water on the earth's surface exposed to the atmosphere as rivers, lakes, streams, the oceans. (See groundwater.)

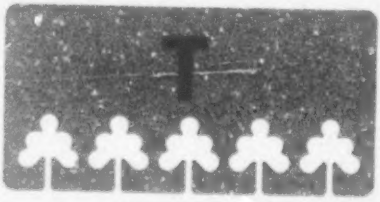
surfactant: An agent used in detergents to cause lathering. Composed of several phosphate compounds, surfactants are a source of external enrichment thought to speed the eutrophication of our lakes.

surveillance system: A monitoring system to determine environmental quality. Surveillance systems should be established to monitor all aspects of progress toward attainment of environmental standards and to identify potential episodes of high pollutant concentrations in time to take preventive action.

suspended solids (SS): Small particles of solid pollutants in sewage that contribute to turbidity and that resist separation by conventional means. The examination of suspended solids and the BOD test constitute the two main determinations for water quality performed at waste water treatment facilities.

synergism: The cooperative action of separate substances so that the total effect is greater than the sum of the effects of the substances acting independently.

systemic pesticide: A pesticide chemical that is carried to other parts of a plant or animal after it is injected or taken up from the soil or body surface.



tailings: Second grade or waste material derived when raw material is screened or processed.

tertiary treatment: Waste water treatment beyond the secondary, or biological stage that includes removal of nutrients such as phosphorus and nitrogen, and a high percentage of suspended solids. Tertiary treatment, also known as advanced waste treatment, produces a high quality effluent.

thermal pollution: Degradation of water quality by the introduction of a heated effluent. Primarily a result of the discharge of cooling waters from industrial processes, particularly from electrical power generation. Even small deviations from normal water temperatures can affect aquatic life. Thermal pollution usually can be controlled by cooling towers.

threshold dose: The minimum dose of a given substance necessary to produce a measurable physiological or psychological effect.

tolerance: The relative capability of an organism to endure an unfavorable environmental factor. The amount of

a chemical considered safe on any food to be eaten by man or animals. Also see pesticide tolerance.

topography: The configuration of a surface area including its relief, or relative elevations, and the position of its natural and man-made features.

toxicant: A substance that kills or injures an organism through its chemical or physical action or by altering its environment; for example, cyanides, phenols, pesticides or heavy metals. Especially used for insect control.

toxicity: The quality or degree of being poisonous or harmful to plant or animal life.

toxic pollutants: A combination of pollutants including disease-carrying agents which, after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism can cause death or disease, mutations, deformities, or malfunctions in such organisms or their offspring.

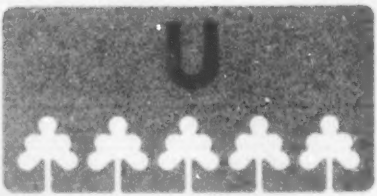
trace metals: Metals found in small quantities or traces, usually due to their insolubility.

trickling filter: A device for the biological or secondary treatment of waste water consisting of a bed of rocks or stones that support bacterial growth. Sewage is trickled over the bed enabling the bacteria to break down organic wastes.

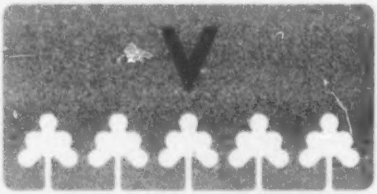
troposphere: The layer of the atmosphere extending seven to ten miles above the earth. Vital to life on earth, it contains clouds and moisture that reach earth as rain or snow.

turbidimeter: A device used to measure the amount of suspended solids in a liquid.

turbidity: A thick, hazy condition of air due to the presence of particulates or other pollutants, or the similar cloudy condition in water due to the suspension of silt or finely divided organic matter.



urban runoff: Storm water from city streets and gutters that usually contains a great deal of litter and organic and bacterial wastes.



vapor: The gaseous phase of substances that normally are either liquids or solids at atmospheric temperature and pressure; for example, steam and phenolic compounds.

vapor plume: The stack effluent consisting of flue gas made visible by condensed water droplets or mist.

vaporization: The change of a substance from the liquid to the gaseous state. One of three basic contributing factors to air pollution, the others are attrition and combustion.

variance: Sanction granted by a governing body for delay or exception in the application of a given law, ordinance or regulation.

vector: Disease vector—a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another.

vinyl chloride (VC): A gaseous chemical suspected of causing angiosarcoma, a rare form of cancer of the liver.

volatile: Evaporating readily at a relatively low temperature.

waste: Also see solid waste. (1) bulky waste—items whose large size precludes or complicates their handling by normal collection, processing or disposal methods. (2) construction and demolition waste—building materials and rubble resulting from construction, remodeling, repair and demolition operations. (3) hazardous waste — wastes that require special handling to avoid illness or injury to persons or damage to property. (4) special waste—those wastes that require extraordinary management. (5) wood pulp waste — wood or paper fiber residue resulting from a manufacturing process. (6) yard waste—plant clippings, prunings and other discarded material from yards and gardens. Also known as yard rubbish.

waste water: Water carrying wastes from homes, businesses and industries that is a mixture of water and dissolved or suspended solids.

water pollution: The addition of sewage, industrial wastes or other harmful or objectionable material to water in concentrations or in sufficient quantities to result in measurable degradation of water quality.

water quality criteria: The levels of pollutants that affect the suitability of water for a given use. Generally, water use classification includes: public water supply; recreation; propagation of fish and other aquatic life; agricultural use and industrial use.

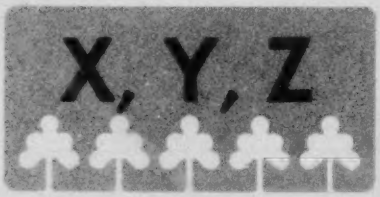
water quality standard: A plan for water quality management containing four major elements: the use (recreation, drinking water, fish and wildlife propagation, industrial or agricultural) to be made of the water; criteria to protect those uses; implementation plans (for needed industrial-municipal waste treatment improvements) and enforcement plans, and an anti-degradation statement to protect existing high quality waters.

watershed: The area drained by a given stream.

water supply system: The system for the collection, treatment, storage and distribution of potable water from the sources of supply to the consumer.

water table: The upper level of ground water.

wetlands: Swamps or marshes, especially as areas preserved for wildlife.



zooplankton: Planktonic animals that supply food for fish.